

[illegible]

The field of view and measurement position used for measuring the film thickness of a transparent film during processing are set such that the measured area is not affected by the film thickness distribution of the actual device patterns subjected to CMP processing. Moreover, the film thickness is measured by specifying relatively level measurement regions, according to a characteristic quantity of the spectral waveform of the reflected light from the transparent film, such as the reflection intensity, frequency spectrum intensity, or the like, thereby permitting highly accurate control of film thickness. Consequently, the levelling process in CMP processing can be optimized on the basis of the film thickness distribution, the film deposition conditions in the film deposition stage and the etching

conditions in the etching stage can also be optimized, and hence a high-precision semiconductor device can be manufactured.

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